LOADSTAR LETTER

"The Biggest, The Best" • Since 1984 • Number 8 • March 1994

GEnie's Research Center $12.50, Jeff Jones Zero

Recently, in the midst of writing an article, I went to *GEnie's Grolier's encyclopedia* for reference and found it temporarily unavailable. *Grolier's* is a wonderful online encyclopedia that allows you to search for information on most any topic. The menus and submenus derived from your searches lead you to mountains of information, perhaps information you never knew existed. To get to the encyclopedia, just type "groliers" from any prompt. There is no extra charge to use *Groliers.*

My problems started when, in the absense of *Groliers*, I chose to try the research center, which is not "on" *GEnie*, but run from a remote board. I knew there was a surcharge for *The Research Center*, but I figured that if I tried only one search, it shouldn't cost too much. Well I made my search, knowing full well that if the search came up empty, I'd still be charged. Well about four articles came up. I read one very short article, and tried another, noticing that my running total kept climbing before my eyes. I only did one search, but each useless article that I found brought additional charges. In fact when I re-read one article, I was charged for that.

Anyone who knows me knows how I feel about fees for intangible services. When I came away with nothing for $12.50, knowing that *Groliers* could have provided my answer for free, I was not a happy camper. The research center does search thousands of published and current articles from many databases. *Groliers* searches only its own database. So what you're looking for in the research center is probably there -- but it'll cost you -- if you find it. It's at times like these, I'm glad that *Softdisk* pays my *GEnie* bill. ❑

Locations 780, 781,782, And SYS: A Twisted ML Love Rectangle

It was always clear that location 781 had *something* to do with the .X register. When clearing a line with the *Kernal* routine at location 59903, I was always equally comfortable LDXing the .X register when programming in machine language, and POKEing 781 when programming in BASIC.

While working on yet another toolkit, this one for big-screen games, I became concerned that people who used compilers or pure machine language would miss out. So I looked into ways of successfully communicating with the toolbox from a compiled program.

I knew the .X register was on-chip with the .Y register and the Accumulator. Perhaps I thought 781 *was* the .X register. Well today I learned what I already knew was true: These locations aren't the registers, but SYS will LOAD the registers with what it finds in these locations. It says this in Compute!'s *Mapping the C-64*, but nothing about it in the *Programmer's Reference Guide.*

Right now the seasoned ML programmers are going, "*Duh*! Now *that* was a big newsflash, Jeff. I think I'm gonna have a heart attack and die from that news." Well maybe it's not news to the Jim Butterfields out there, but it sure is news to me, and it's helped me immensely. In fact from now on my toolboxes will be accessible from compiled programs. ❑

Ten LOADSTAR Programs Go Online at GEnie SuperStore

That's right. Softdisk now has a "Download Superstore" on *GEnie.* There customers can purchase a program with their credit card, download it, and have it immediately. There's even online support. Veteran subscribers will find nothing new online for now, but for the non-subscriber, there's a plethora of programs to come.

MAD MAN SOFTWARE has supplied the fast compression and decompression software. Most programs are self-dissolving, but for the larger packages like *TAX ACCOUNTANT 1993,* the *Decomper* (supplied free of charge) is online. It will decompress our archives quick and easy. ❑

CMD HD Self-Motivated Head Movement "Nuthin But A Thang."

LOADSTAR recently purchased a new *CMD HD-85*, and had an old one repaired. The HD is noticeably faster than *LOADSTAR's* 3-year old *HD-40.* While programming, I would hear sudden head movement on the HDs, as if a file were being accessed without my permission. I called *CMD*, and asked Doug Cotton about the head movement. He informed me that the new drive mechanisms may periodically do some sort of self diagnostic or perhaps head parking during periods of inactivity. It's not a function of *CMD's* DOS, but of the mechanism itself. It's normal, and nothing to worry about. ❑

Interesting Places To Log On

What follows is an edited list of BBSs that may be of interest to people who like to be online. The unabridged list may be found on GEnie's STARSHIP Roundtable in file #22087, FONLIST.LZH.

Continued On Page 4

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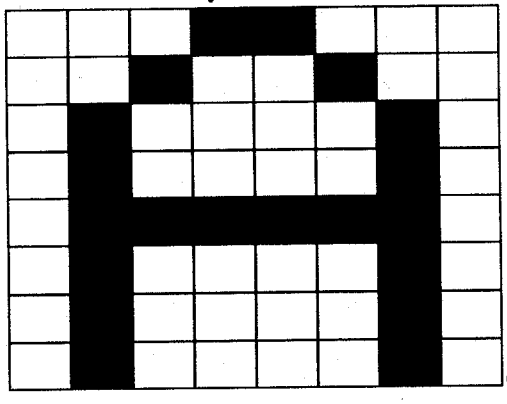
Graphics Heaven!

by Jeff Jones



Anyone who's edited a font knows that the eight rows and columns above constitute a bitmap. A bitmap is a way of mapping numbers graphically. We do this by converting numbers into their binary form. Normally we use base-ten decimal notation: 1, 2, 45, 87 -- you know, "regular" numbers. Binary (base 2) is sort of like Roman numerals in that it's a different way of showing the same numbers: 00000001, 00000010, 00101101, 01010111. As you can see, binary looks as different from decimal as Roman notation. Base-ten numbers are coded similarly. You look at 1482 and instantly understand how much it is, but that's because you're used to doing it. 1482 is:

(2x1) + (8x10)+(4x100)+(1x1000)

You can see the 82 and the 400 instantly. You can even see it as 1000+482 without batting an eye. Binary is broken down the same way, only instead of using 1 and powers of ten (1, 10, 100, 1000, 10000...) we use 1 and powers of 2 (1, 2, 4, 8, 16, 32, 64, 128). 25 looks like this:

```
128 64 32 16  8  4  2  1
  0  0  0  1  1  0  0  1
```

16+8+1=25. Not that complex. The "A" pictured above is 8 binary numbers stacked together so that they look like a picture:

```
00011000 = 16+8 = 24
00100100 = 32+4 = 36
01000010 = 64+2 = 68
01000010 = 64+2 = 68
01111110 = 64+32+16+8+4+2 = 126
01000010 = 64+2 = 68
01000010 = 64+2 = 68
01000010 = 64+2 = 68
```

So whenever you see an "A" (at least an "A" shaped like the one in the grid), somewhere in memory are the eight numbers, 24, 36, 68, 68, 126, 68, 68, 68.

But remember, this is a bitMAP. We can represent those binary digits many different ways. In this case it's 8x8, but how about 4x16 or 2x32. Of course in those configurations, the 64 digits will look nothing like "A."

But how about something new? I want to look at the entire 64 bits in the bitmap as one 64-bit number:

0001100000100100001000010010000100111111001000010010000100100010

Remember, just as 1000 isn't the highest possible place in base-ten numbers, 128 isn't the highest place in binary numbers. Those place values just keep doubling. By the time you get to the 64th bit, the place is worth a whopping:

9,223,372,036,854,775,808!

So the highest possible value in a 64-bit number is nine quintillion two hundred twenty-three quadrillion three hundred seventy-two trillion thirty-six billion eight hundred fifty-four million seven hundred seventy-five thousand eight hundred and seven! That's if bits 0-63 were all 1s.

Adding up all the place values used in our "A" grid into a 64-bit number, we have a total of:

1,739,588,199,426,399,386

It may be hard to conceptualize, but this number is "A", at least the graphic bitmap of a. Even if a program has nothing to do with bitmaps, this number will exist in memory as the same stream of dots that make "A" in an 8x8 grid.

Why am I making this point? Because if we write a program that counts from 0 to 9,223,372,036,854,775,808 and show it in a bitmap, we would see every possible 8x8 character. Every stile of "A" and their reverse, every "E" and "Z", every graphics character, and its reverse, upside down and on the side, shifted, you name it. There would also be a lot of useless garbage characters.

Let's take it a bit farther. Your hires screen on the C-64 has 320x200 pixels. It adds up to 64000 bits. Any graphic you have on your hires screen is actually a 64000-bit number. For 640x200 screens that's a 128000-bit number. Please don't ask me to translate either number into base-ten!

The point is that any any picture on your screen can be reduced to a base-ten number. What's so great about that? Consider this: between zero and 2^64000 is every black and white picture drawable on a C-64 screen. This includes every point in a Mandelbrot/Julia set, every picture ever drawn by Walt Harned, every possible game screen, every combination of words written on a C-64 screen, a digitized picture of you. Not only that, every digitized frame of every movie and cartoon and photo ever shot (at least in its black and white form). There's even a picture of you brushing your teeth. A picture of you on the moon. 2^64000: Every C-64 image possible, along with the negative and the flips -- rotated at every angle. Jimmy Hoffa's murder and final resting place. Every page of the bible digitized at various points. Not just the Bible, but every book ever written-- and not written.

The same argument can be made in color, and for sound without adding bitplanes. In fact all the needed color separations exist in the black & white universe I described.

Computers will never be fast enough to flip through and show us eternity. If we started the fastest computer counting from 0 to 2^128000, we'd be in for a long wait to see the first picture. even if we were able to jump ahead by countless trillions, chances are we'd keep landing in garbage instead of the Mona Lisa.

Last year, when I had this graphic prophecy, I wrote a machine language program that attempted to look at all the possible 8x8 characters (2^64). I quickly found that even in machine language, with all interrupts off, tens of thousands of calculations per second, it takes way too long to count to nine quintillion. The project was quickly abandoned when the advancement of the graphic garbage slowed to a crawl when it started drawing the third line. The fourth line was many magnitudes slower. ❑

Software For Sale

Politically incorrect C-64 software. Demo Program #1 $3.00. **Arctech Soft**, P.O. Box 56911, North Pole AK 99705-6911

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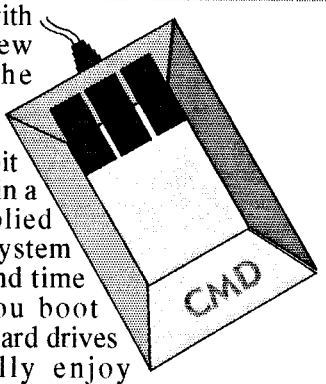
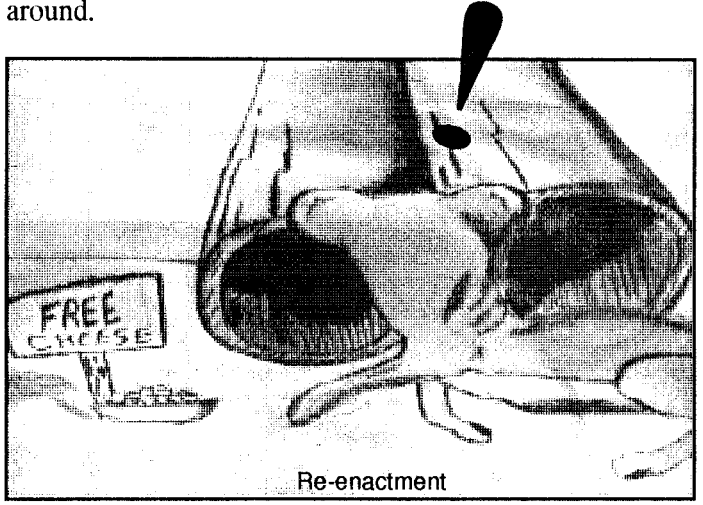


CMD is being beseiged with advance orders for their new three-button mouse. On the phone, they didn't seem to disturbed by that. They did part with one very interesting bit of news: The mouse will contain a real-time clock. With a supplied auto-exec program on your system disk, you can have the date and time automatically set when you boot GEOS. People without CMD hard drives and RAMLinks can finally enjoy automatic time-date stamping. We're looking forward to using the mouse on our GEOS 128 computer. Yes, LOADSTAR is so decadent that we have a whole system used mainly to run GEOS.

Speaking of CMD, QUESTRONIX sent us a copy of the latest version of the C-64 emulator for the Amiga. Wouldn't you know it, Doug Cotton gets a "thank you" on the acknowledgments page. This is one man that gets around.

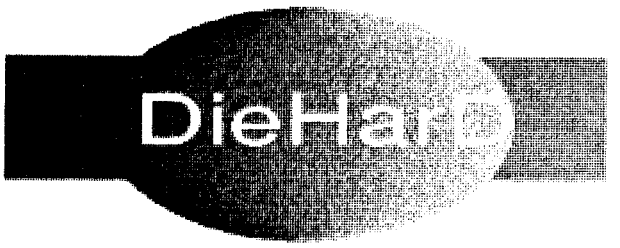


Re-enactment

Jeff Blows Away 3 Softdisk Mice And Gets His Own Office!

There had been screams of "Eeek" coming from all over Softdisk, but when mice dared leave evidence of their presence on Jeff's desk, he sprang into action. Soon mouse bodies littered the Softdisk domain, inspiring even more screams of "Eeek!" Pressured by local animal rights activists, Jeff hung up his weaponry and retired his mouse traps. When asked for a comment, he only straightened his stetson and said, "War is hell."

Jeff's new office came not long afterward. Now Jeff has to see a "Rush Is Right" bumper sticker stuck to an office door accross the hall every time he leaves his office. Since Fender is next door, and not right at Jeff's elbow, Jeff has installed a larger stereo, and desk. He would have installed a new footrest, ton his desk, but as fate would have it, Big Al Vekovius is on the other side.



Jan/Feb 1994
"Killer GEOS Issue"

This is destined to be a very hot item. I curled up in the bed with the January *dieHard* and began learning things about *GEOS* almost immediately. The tips flew fast and furious. the topics covered everything from REUs to postscript. There were tips on converting specialty graphics to *GEOS*. There were also ads for companies and products I never knew existed.

The editors tell you everything you need to know in order to join the *GEOS* craze. And since it might lessen our tech support calls for *GEOS* (which isn't our product, and we don't support it), we highly recommend this as a back issue. Not only does it show you how to use *GEOS*, but lists all sorts of tools that every *GEOS* lover should have.

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Parallel Cable (RAMLink to HD)	$14.95
1 or 4 MB SIMM's	$52/$170

HD Series SCSI Hard Disk Drives

HD-40, **85 MB** (Special Edition)	$495.00
HD-100, **170 MB** (Special Edition)	$595.00
HD-200, **245 MB** (Special Edition)	$695.00

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FD-2000 (800K and 1.6 MB)	$179.95
FD-4000 (800K, 1.6 MB and 3.2 MB)	$249.95
FD Real-Time-Clock Option	$20.00
Box of 10, High Density Disks (1.6MB)	$14.95
Box of 10, Enhanced Density Disks (3.2 MB)	$40.00
Single ED-Disk. (3.2 MB)	$5.00

JiffyDOS

(Specify computer and drive serial number)

JiffyDOS C64-System	$49.95
JiffyDOS SX-64 System	$49.95
JiffyDOS C-128 System	$59.95
JiffyDOS 128-D System	$59.95
Additional Drive ROM's	$24.95

CMD Software

gateWay/64 or 128 (GEOS Desktop)	$29.95
Collette Utilities (Handy Geos Utilities)	$19.95
Perfect Print LQ for GEOS (Laser-like output)	$49.95
geoMakeBoot (Makes Bootable copies)	$12.95
CMD Utilities (Powerful Disk Utilities)	$24.95
JiffyMON (ML Monitor for JiffyDOS 64)	$19.95

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GEOS 64 v2.0	$44.00
GEOS 128 v2.0	$49.00
geoCalc 64	$40.00
geoCalc 128	$45.00
geoFile 64	$40.00
geoFile 128	$45.00
geoProgrammer	$45.00
geoPublish	$40.00
geoChart	$29.00
Desk Pack Plus	$29.00
FONTPACK	$25.00
International FONTPACK	$25.00
geoBASIC	$20.00
BeckerBASIC	$20.00
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RUN GEOS Power Pak I or II (Specify)	$20.00

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Airborne Ranger	$16.00
Atomino	$17.00
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Laser Squad	$13.00
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Rings of Medusa	$16.00
RUN C128 Funpak	$15.00
RUN C64 Gamepak	$15.00
RUN C64 Strategy Games 1 or 2 (Specify)	$15.00
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Skate or Die	$13.00
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Tie Break Tennis	$16.00
Total Eclipse	$10.00
Ultima III, IV, (Please Specify)	$17.00
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OmniWriter with OmniSpell (Skyles)	$30.00
Word Writer 6 (Timeworks)	$30.00
Super Script 64 (Precision)	$15.00
Super Script 128 (Precision)	$20.00
Data Manager 2 (Timeworks)	$16.00
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PowerPlan 64 (Abacus)	$16.00
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Cadpak 128 (Abacus)	$25.00
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Chartpak 128 (Abacus)	$25.00
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RUN Super Starter Pak 1541	$20.00
RUN Super Starter Pak 1581	$20.00
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BASIC 128 Compiler (Abacus)	$25.00
Blitz! 64 Compiler (Skyles)	$30.00
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Fortran 64 (Abacus)	$17.00
Pascal 64 (Abacus)	$17.00
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Dr. T KCS64 & Model-T Midi Interface	$105.00
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Dr. T CZ-Rider MIDI Ed/Lib	$20.00
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Anatomy of the 1541	$12.00
C128 Tricks & Tips/ Peeks & Pokes	$15.00/$15.00
C128 Computer Aided Design	$12.00
Commodore 64 Tricks and Tips	$12.00
Graphics Book for the C-64	$12.00
Printer Book for the C64	$12.00
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SwiftLink Modem Cable (DB9-DB25)	$9.95
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BOCA 14.4K w/SwiftLink and Cable	$249.00

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SID Symphony Stereo Cartridge	$39.95
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Quicksilver 128 IEEE Interface	$120.00
C-1351 Mouse	CALL
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C-128 Power Supply (Repairable)	$45.00
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Spring '85	Summer '85
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- 1986 -	
January/Febuary	March/April
May/June	July/August
September/October	Nov/Dec
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January/February	March/April
May/June	July/August
September/October	Nov/Dec
- 1988 -	
January/February	March/April
May/June	July/August
September/October	Nov/Dec
- 1989 -	
January/February	March/April
May/June	July/August
September/October	Nov/Dec
- 1990 -	
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Summer Spcl.	Nov/Dec
- 1991 -	
January/February	March/April
May/June	July/August
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January/February	March/April
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January, February, March, May, June, July, August, September, October

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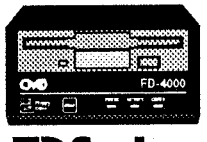
January, May, June/July, December

- 1991 -
Jan/Feb, June/July, Sept/Oct

- 1992 -
January/February, March/April, May/June, July/August, September/October November/December

SCSI Hard Drive for the C64 & C128

HD Series Hard Drives are available in capacities up to 200MB, are fully partitionable, and can emulate 1541, 1571, & 1581 disks while Native partitions utilize MSDOS-style subdirectories. HD's connect easily to the serial bus or parallel via RAMLink. Includes built-in JiffyDOS, SWAP feature and Real-Time-Clock. HD Series Drives offer superior compatibility with most commercial software including BBS, Productivity and GEOS. And with new pricing, HD Series drives offer the lowest cost/MB of any C64/128 storage device.



FD Series

1.6 MB and 3.2 MB 3.5" Floppy Disk Drives

The FD-2000 and FD-4000 disk drives utilize today's latest 3.5 inch technology. FD-2000's support 800K (1581 style) and 1.6MB (High Density) formats, while the FD-4000's offer support for the 3.2MB (Enhanced Density) format as well. Fast and reliable, they support 1541, 1571 and 1581 style partitions, Native Mode partitioning and can actually read and write 1581 disks. FD's feature built-in JiffyDOS, SWAP button and optional RTC. High capacity, speed and compatibility make the FD right for every application, including GEOS.

RAMLink

Power Backed Expandable REU

The fastest possible form of storage, RAMLink provides instant access to files and retains data while your computer is turned off. Easy to use and expandable up to 16MB, RAMLink utilizes the same powerful operating system found in the HD. RAMLink also offers built-in JiffyDOS, SWAP feature, reset button, enable/disable switch, pass-thru port and RAM port for REU/GEORAM use. Ideal for those requiring maximum speed, expandability and compatibility with all types of software and hardware including GEOS.

JiffyDOS

Speeds up disk access by up to 1500% while retaining 100% compatibility with software

- Speeds up Loading, Saving, Verifying, Formatting and Reading/Writing of Program, Sequential, User and Relative files unlike cartridges which only speed up Loading and Saving of PRG files
- Built-in DOS Wedge plus 17 additional features including file copier, text dump, printer toggle, and redefinable function keys make using your computer easier and more convenient
- ROM upgrade installs easily into most computers and disk drives. Supports C-64, 64C, SX-64, C-128, 128-D, 1541, 1541C, 1541-II, 1571, 1581 and more. 128 system supports both 64 and 128 modes and upgraded Kernal routines.

U.S. Shipping Information

Books & Software: First Item $5.00, plus $1.00 for each add'l item. **Hardware:** $5.50 per item, 2nd Day Air $10.00. **Power Supplies:** $7.50 ea, 2nd Day Air $14.00. **Hard Drive:** $15.00, 2nd Day Air $25. **RAMLink, FD Drive:** $9.00, 2nd Day Air $16.00. **RUN Issues:** $5.50 (3), $6.50 (6), $7.50 (12). **Note:** Prices subject to change without notice. Call for current price and availability. ALL Foreign Orders Call or Write for shipping details. **Payment:** MC, Visa, Money Order or Bank Check. COD shipments add $5.00. COD's over $200.00 require advanced deposit. Personal checks are held for 3 wks. No refunds on opened software. 30 day return policy. 10% restocking fee is required on all returns.

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